NATURAL RESOURCES & GREENSPACE _____ CHAPTER 7

Introduction

An important element of land use planning is the assessment of how natural resources are responsibly utilized, managed, developed and preserved within a community. This chapter provides an inventory and assessment of locally significant and unique natural and historic resources and presents a determination of their vulnerability to the impact of growth and development. Natural and historic resources provide opportunities and constraints on the way land is developed. These resources include flood plains and topography; aquifers, water recharge areas, watersheds and wetlands; soils, prime agricultural and forested lands; scenic views and sites; and historic properties. Strategies for managing these important natural and historic resources in accordance with citizen preferences and desires are presented throughout this chapter, as well as in the Implementation Chapter of this Growth Management Plan.

As Columbia County continues to develop, more and more effort is being put into finding a balance between environmental needs of clean air and water, the availability of water, retaining areas of natural significance for animal and plant habitats, and those of development and growing population. Increased education of the general public and developers with regard to environmental issues will bring about increased awareness of the importance of maintaining a proper balance between people and their environment.

The Natural Environment of Columbia County

Columbia County is situated on the Savannah River in eastern Georgia. Columbia County neighbors Augusta, and is 2 ½ hours from Atlanta, the beaches of the Atlantic and the Southern Appalachian Mountains. Columbia County occupies a land area of 185,922 acres, or 307.8 square miles, plus 10,049 acres of water area. Columbia County straddles the "fall line," a geologicboundary following the Appalachian Mountain range from New York to Alabama. In Georgia and South Carolina the fall line separates the Piedmont from the Coastal Plain. The northern three-fourths of the County is located in the Southern Piedmont, while the southern one-forth is in the Carolina and Georgia Sandhills land resource areas. Drainage is provided principally by the Savannah River and its tributaries. The Savannah River is the boundary separating Columbia County and South Carolina to the east; Richmond County is to the South, McDuffie County to the west and Lincoln County is located to the north.

Climate

Columbia County's long hot summers and year round high humidity are a result of moist tropical air from the Gulf of Mexico, which persistently covers the area. Winters are short and pleasantly cool, with relatively brief cold waves occasionally occurring in one or two-day periods. Although once rare, droughts are becoming more and more common. The average temperature in the winter is 47 degrees F, and 79 degrees in the summer.

Topography and Steep Slopes

Columbia County is within the Southern Piedmont and the Georgia Sandhills land resource area of Georgia. The Southern Piedmont Area topography consists mostly of broad to narrow, gently sloping ridge tops and moderately steep hillsides adjacent to drainage ways. In most places, the soils are low in silt and mica content. The area is primarily a gently sloping plain dissected by streams in small, shallow valleys. The ridge tops are wider and the drainage ways are fewer in the southern part of the County. Nearly level flood plaines are located along the Savannah River and its tributaries. In some places the flood plains are adjacent to moderately steep hillsides.

Average elevation is 300 feet above sea level. As part of the Piedmont region, the majority of slopes in the County range from 2 to 10%. Steeper slopes of up to 25% are found along the Savannah River and the Kiokee, Little Kiokee and Uchee Creeks. The area is decorated with a lush blanket of pine, oak and hickory forests. The topography in Columbia County poses few development constraints; however, during the land development process, the County requires the notation of steep slopes on all site plans. There are a few areas of the County where the slope of the land is steep enough to warrant special management practices, although the majority of these areas are within floodplains and are already regulated by ordinance.

Protected Mountains

There are no mountains that fall within the Department of Natural Resources “protected mountains” criteria in Columbia County

Soils

Five major soil associations are present in Columbia County. Due to soil types, septic tank usage is fairly restricted within the County. A little over 20% of the soils within Columbia County, including Georgeville-Wedowee in the northern part of the County, Wedowee-Cecil in the central part of the County, and Chewacla-Toccoa-Wehadkee are in flood plains and are unable to support septic tanks and certain other types of uses; and, therefore, currently present limitations for use. The Cecil-Appling-Wedowee makes up approximately 53% of the County, while the Wagram-Troup-Norfolk, makes up another 17%. These soils have a fair or good potential for urban use, with some limitations on septic tank placement. The County has adopted standards that restrict uses on sensitive soils and limit the use of septic tanks in all but very low-density development areas. As part of this Growth Management Plan, the County will further study appropriate land uses in areas that have sensitive soils. The following list describes the general soil associations and development potential of these soil types.

Soils on hillsides of the Piedmont Upland: well-drained soils on sloping and moderately steep hillsides. Slopes range from 10 to 25 percent. The soils have reddish or brownish, loamy surface layer and a reddish or brownish, clayey or sandy subsoil.

Georgeville-Wedowee—Sloping and moderately steep, well drained soils that have a loamy or sandy surface layer and clayey subsoil; the silt content is medium or low. These soils make up about 1% of soils in the northern part of the county. The areas are currently woodlands of Loblolly and Virginia Pine, and have poor potential for farming. Development potential is limited on this soil due to slope and poor septic tank absorption fields.

Wedowee-Cecil—Sloping and moderately steep, well drained soils that have a sandy or loamy surface layer and clayey subsoil. This soil type is predominately in the central part of the County and makes up about 18% of soils in the County. These soils are mostly in woodland use, with a small portion used for pasture and row crops. Development potential is limited on this soil due to slope, soil strength and poor septic tank absorption fields.

Soils on ridge tops and hillsides of the Piedmont Upland: well-drained soils on very gently sloping ridge tops and hillsides. Slopes range from 2 to 10 percent. These soils have a mainly brownish, loamy surface layer and mainly reddish or yellowish, clayey subsoil.

Cecil-Appling-Wedowee—This soil type is located on very gently sloping ridge tops and hillsides throughout the county except in the extreme northern and extreme southern parts of the county. This soil type makes up about 53% of the County. These soils are mainly used for row crops, with some pasture and woodland. The potential for woodland and urban uses is fair. The clayey subsoil is a limitation to use of the soils for sanitary facilities.

Soils on ridge tops and hillsides of the Carolina and Georgia Sandhills: Well-drained soils that are smooth and convex on very gently sloping ridge tops and hillsides. Slopes range from 2 to 10 percent. The soils have a brownish, sandy surface layer and a predominately brownish or yellowish, loamy subsoil.

Wagram-Troup-Norfolk—This soil type makes up approximately 17% of soils mainly in the southeastern part of the County. This soil is good for urban types of development, although soils that have a thick sandy surface and subsurface have limited sanitary facility usage as well as limitation to recreation development.

Soils on Floodplains: poorly drained to well-drained soils that are nearly level. Soils have a brownish loamy surface layer and a predominately brownish, loamy underlying layer that has gray mottles.

Chewacla-Toccoa-Wehadkee—These soils are located in flood plains of the Savannah River and Kiokee, Little Kiokee, and Uchee Creeks. This soil type makes up approximately 2% of the County soils. Primarily wooded, the association is flooded in most places roughly once in five years. These areas that are very susceptible to flooding are ideal habitats for plant and animal life, and are not recommended for development of any kind.

The County requires site-specific soil studies to be conducted and submitted as part of the site hydrology and grading plan. In addition, the Department of Natural Resources Minimum Lot Size Tables govern specific soil groupings.

Prime Agricultural and Forest Land

The Georgia County Guide classified approximately 29,146 acres as non-forestry farmland in 1997 or 15.7% of the total land in Columbia County. In 1997 there were 169 farms in the County, the average size being 172 acres, although the median farm size was approximately 67 acres. Crops include corn, soybeans and wheat. Commodities include forestry, dairy, beef cows and greenhouse production. Hogs and chickens are not raised commercially in the County. The

county ranked 103 within the state for commodity production, with forestry being the County's highest valued production. Both harvested cropland and livestock production have been steadily decreasing. In 1992 the county reported 3,046 acres of harvested cropland. In 1997 harvested cropland declined to 2,292 acres. The same is true for cattle production; in 1992 5,400 cattle heads were reported, and in 1997 only 4,600 heads were reported. As the County continues to develop, it is anticipated that farm and livestock production will continue to decrease as agricultural uses are converted into residential and commercial uses.

Currently, 140,500 acres in Columbia County are forested, or 75.7% of the entire county. Of this total, 31,600 acres are owned by the forest industry. As mentioned earlier, the timber Industry is the highest valued commodity harvested in the County. The approximate make-up of tree specifications is as follows: Loblolly short-leaf pine 58.2 acres; oak-pine 21.1 acres; oak-hickory 22.3 acres; oak-gum-cypress 15.8 acres. Much of the undeveloped land in the County is currently forested, but planned for more intense development.

As Columbia County continues to grow, more and more farmland will be converted into urban uses, although soil restrictions on septic tank development and the lack of sanitary sewer to the north and west of the County will allow the County to retain its rural character well into the future. New development must follow the County's requirements for densities, landscape requirements and minimum requirements for tree protection as set forth in the development regulations and Columbia County Zoning Ordinance. Conformance to the DNR regulations for protection of wetlands, ground water recharge areas and aquifers and water supply watersheds, together with the currently adopted tree protection policies and procedures, should control and preserve as much forested land as possible. The County periodically reviews its regulations to insure that they are appropriate and adequate.

Major Parks, Recreation and Conservation Areas

Columbia County is fortunate to have many conservation, recreation and natural areas. Additional information on historical and recreational areas in the County can be found in the Historic Resource's Chapter and the Community Facilities Chapter. Following is a brief description of the key natural attractions within the County.

1. Clarks Hill Lake

Clarks Hill Lake, also known as Thurmond Lake, is the largest U.S. Army corps of Engineers project east of the Mississippi. Built between 1946 and 1954 as part of a comprehensive plan of development for the Savannah River Basin, the lake covers 70,000 acres and has nearly 1,200 miles of shoreline, of which 120 miles are in Columbia County. The lake is located on the Savannah River, 22 miles above Augusta, Georgia. Thurmond Dam impounds a lake that stretches nearly 40 miles up the Savannah River and 26 miles up the Little River from Georgia into South Carolina. Thurmond Dam was completed in July 1954, at a cost of $79 million. Clarks Hill Lake functions as wildlife refuge and conservation, a tremendous source of recreational opportunities, a source of drinking water, and flood prevention.

The area surrounding Thurmond Lake was once the home of such Indian tribes as the Shawnee, Chickasaw and Yuchi. Cherokees and Creeks also once hunted there. Early settlers included the French Huguenots, who were seeking religious freedom. Several Revolutionary War forts, including Fort James and Fort Charlotte, once stood on sites that are now part of the project. During the early 1800s the region was the scene of the nation's first "gold rush."

Mixed stands of pine trees and hardwoods cover the lake's irregular 1,200-mile shoreline. More than 100 islands, created when the lake was filled, jut above its surface. A diversity of plant, fish and animal types, including some endangered species, are found on project lands. The most notable endangered species is the red-cockaded woodpecker. The lake features white, striped and hybrid bass and a good population of largemouth bass. Crappie, bluegill and sauger round out the major species of game fish.

In addition to the 41,500 acres managed by the Corps' Wildlife Biologist, 29,500 acres of project land have been leased to Georgia and South Carolina for wildlife management. Deer, turkey, quail, dove and other small game are abundant. Two resident flocks of Canadian geese have been established on the lake. The Corps also maintains a large number of nest boxes for wood ducks and bluebirds throughout the area.

The Corps estimates that through 1990 the project prevented $25.8 million in flood damage along the Savannah River. Thurmond Dam is also credited with reducing the amount of sediment carried by the river into Savannah Harbor by 22%, thus significantly reducing the harbor's maintenance costs.

Eleven water quality-monitoring stations are maintained around the lake to ensure the highest possible water quality for public recreation and for resident wildlife. Water quality is monitored further by an electrical system that continuously checks water releases downstream from the dam.

A large variety of passive and active recreational opportunities are available at Clarks Hill Lake. An excellent network of county, state and federal highways provides easy access to the lake. Clarks Hill Lake is well marked with navigation aids, making it easy for visiting boaters to find their way around. Recreational activities include overnight camping at state and private campgrounds, boat ramps and marinas, with convenient access for swimming, fishing and hunting. Abundant wildlife populations make quality hunting and wildlife observation opportunities possible. Deer, turkey, quail, dove and other small game are all located in the area.

The Thurmond Visitor Center is located at the South Carolina end of the dam just off highway 221. This visitor's center contains numerous exhibits about the lake, plant, fish and animal species, and surrounding area.

Several improvements are currently planned for the lake and surrounding area, including:

- Ridge Road Campground, one of the oldest on the lake, is currently being refurbished with new furniture, new recycled plastic "cross ties," a new gate attendant/camper registration station, and as many as 15 new sites. A central water hydrant has been added to the island where the camping primitive sites are located.
- The deepwater fish attractors are currently being refurnished.

2. Augusta Canal

Built in 1845 as a source of waterpower to attract manufacturing to the South, in its heyday an estimated 25,000 bales of cotton a year moved along canal banks. The "Canal Zone" is a newly designated Federal Heritage Corridor. Recreational opportunities include hiking, boating, canoeing and fishing. Future development includes a canal museum, improved trails and a canoe launching area.

3. Mistletoe State Park

This State Park is located adjacent to Clarks Hill Lake and contains 92 campsites, 10 cabins, 4 picnic shelters, a year-round group shelter, new pioneer area for group camping, canoe and boat rentals, 3 boat ramps and a swimming area.

4. Savannah Rapids Pavilion

The Savannah Rapids Pavilion was built in 1993 with sales tax revenue and overlooks the beautiful Savannah River. This pavilion marks the entrance to the August Canal National Heritage Area and is surrounded by picnic areas and a playground designed for small children. Walking, canoeing, fishing and bicycling are available along a scenic eight-mile trail leading to downtown Augusta. The Pavilion also provides meeting and events space.

5. Heggie's Rock

A spectacular outcropping of granite in Appling, located off of Old Louisville Road, Heggie's Rock is one of Georgia's twelve natural landmarks. Heggie's Rock spreads over 101 acres, rises 70 feet high, and is home to many endangered plant and animal species. Heggie's Rock is a private nature preserve owned and run by the Nature Conservancy, and is available for tours by appointment.

6. Stallings Island

Stallings Island in the Savannah River is thought to be the earliest colonial settlement in the County. Named after a local plantation owner, James Stallings, the Island is owned by the Archeological Conservancy, and is one of five Columbia County sites listed in the National Register of Historic Places.

7. The Governor's Greenspace Program

The County is currently participating in the newly adopted Governor's Greenspace Program. The intent of the program is to assist localities with the preservation and creation of passive open space. Utilizing resources from this program and others, the County has recently adopted a plan to develop a system of greenways to interconnect recreation, living and working areas throughout the County that include scenic corridors and sensitive natural resources, such as wetland areas of the Kiokee & Euchee Creek basins. The Greenspace Plan is discussed further at the end of this chapter.

Federal, State and Local natural, conservation and recreational areas are well represented in Columbia County. In order to capitalize on its abundant resources, the County is considering studying access to its natural and recreation areas in terms of physical access (transportation, parking), and hours of operation (year round access). In addition, the County is investigating ways to further utilize and enhance these recreation areas, such as adding additional overnight accommodations, additional types of accommodations, and additional recreation facilities.

■ Environmentally Sensitive and Ecologically Significant Areas

Plant and Animal Habitats

Columbia County is home to several species of plants and animals that are classified as endangered, threatened, or rare. State and Federal legislation relating to endangered plants and ani-

mals include the Endangered Species Act of 1973, the State Wildflower Preservation Act of 1973, and the Endangered Wildlife Act of 1973.

The following list includes all plant and animal species that have been found in Columbia County, which are classified as protected by the State of Georgia and/or the Federal Government. Classifications are as follows: T-Threatened and/or E-Endangered.

State and Federally Protected Plants and Animals Found in Columbia County

Plants	Animals
Little Amphianthus T/T	Bald Eagle T/E
Mat-forming quillwort E/E	Wood Stork E/E
Michaux's sumac E/E	Red Cockaded Woodpecker E/E
Relict Trillium E/E	
Georgia plume T-T	
Sweet pitcher-plant S-E	
Granite Whitlow-grass S-E	
Granite rock stonecrop S-T	

A third category is species of management concern. The Fish and Wildlife Service are currently evaluating plants and animals within this category for population threats and trends. Plants and animals include:

- Bachman's sparrow
- Shoals spiderlily
- Southern marshallia
- Ocmulgee skullcap

Properties using federal funds, applying for federal permits or State public agencies using federal funds must survey their properties for endangered species and prepare plans to reduce or avoid impact. As part of the County's Tree Ordinance, developments must retain certain existing mature trees and replant additional trees. Native vegetation is suggested to provide habitats for indigenous birds and animals.

Air Quality

Air quality has a direct and far reaching impact on public health and well-being. Young children, the elderly, and people with asthma and other respiratory ailments are especially vulnerable to polluted air conditions.

Air quality is affected by a number of factors including dust, pollen, temperature, humidity, smoke and chemical emissions. Natural sources of air pollution, such as weather conditions and seasonal changes (pollen) are difficult to control. However, the greatest amount of polluting emissions released into the atmosphere comes from man-made sources.

Ground level ozone is the most serious threat to ambient air quality in Columbia County. Ground level ozone is the principal component of smog, which is a major irritant to the mucous membranes and causes burning and irritation of the eyes, nose and throat. As much as half of the ground level ozone found in urban areas can be traced to mobile sources of air pollution, such as automobiles, trucks and buses.

Another important air pollutant is carbon monoxide (CO), an odorless and colorless gas that in high enough concentrations can cause brain damage. Approximately 90% of carbon monoxide emissions in the atmoshere come from motor vehicle exhaust.

Columbia County is part of the Augusta metro area's urban air quality basin. As part of the overall growth management plan of the County, several policy goals are aimed, in part, on promoting cleaner air, including the promotion of a compact urban form, the development of the greenspace plan and the careful prioritization of infrastructure improvements to discourage sprawl. In addition, the proposed comprehensive transportation plan will further study ways to reduce automobile dependency in the County. Air quality conditions will continue to be monitored in the future.

Water Resources

Columbia County is characterized by a series of broad to narrow, gently sloping ridge tops and moderately steep hillsides adjacent to numerous, small drainageways that dissect the areas. The ridges of this district guide the course of several creeks, including Clarks Hill, Loyd, Kiokee, Little Kiokee, Uchee Creek, Bettys Branch, Jones Creek, Reed Creek, Sandy Run, and Boggy Gut. The Savannah River is the boundary separating Columbia County from South Carolina, and provides the primary drainage for the County. The Kiokee, Little Kiokee and Uchee Creeks are tributaries to the Savannah River. Boggy Gut is a tributary to Brier Creek in Richmond County. The Little River and the Savannah River form a part of the Clark Hill Reservoir. The Savannah River provides primary drainage for the central part of the County. Brier Creek in Warran County drains the southern tip of the county. The Little River and its tributaries drain the northern parts of the County. Drainage basins include Kiokee Creek, Little Kiokee Creek, Euchee Creek, Betty's Branch, Crawford Creek, Jones Creek and Reed Creek.

Availability of water and water quality are major issues for the Columbia County area. Maintaining high standards for water quality results in public health benefits that are advantageous to all Georgians. Land-disturbing activities associated with development can increase erosion and sedimentation; stormwater runoff and industrial uses that involve manufacture, use, transport and storage of hazardous or toxic waste materials pose a potential risk of contamination of nearby public drinking water supplies. It is essential that the quality of public drinking water is ensured, and for this reason it is necessary to protect the water resources that Columbia County

and the surrounding communities rely on as sources of public water. The county has taken several steps to protect its water resources:

- The development of the Greenspace Plan. In conjunction with State funding, the County aims to set aside 20% of its land mass in permanent open space. A large percentage of open space will be along floodplains in order to promote higher water quality standards.
- Land uses and land development strategies have been instituted through ordinance, such as reduction of densities within the Clarks' Hill Lake Area, the encouragement of conservation type subdivisions, and a strong flood development ordinance.
- Septic tanks are restricted to areas of low density, and are subject to additional requirements within groundwater recharge areas.
- The County has adopted a River Corridor Protection Plan for the Savannah River Corridor that meets the requirements of the Mountain and River Corridor Protection Act of 1991.

As part of the requirements of the Georgia Department of Community Affairs' Minimum Planning Standards, communities must comply with minimum standards established by the Department of Natural Resources with respect to land and water resources. Commonly known as "Part 5 Minimum Environmental Standards," these statewide standards were developed by DNR pursuant to Code Section 12-2-8 and address three basic concerns:

- Aquifers and groundwater recharge areas;
- Water supply watersheds; and
- Wetlands.

To comply with the Part 5 Standards for each category of resources, communities must:

- Identify and inventory any occurrences of these resources within the community's jurisdiction;
- Determine whether the community has appropriate protective regulations that are at least as stringent as those imposed by DNR; and
- Determine whether additional regulations are needed to meet or exceed the minimum standards imposed by DNR.

Aquifers and Groundwater Recharge Areas

Recharge areas are portions of the earth's surface where water infiltrates the ground to replenish an aquifer, which is any stratum or zone of rock beneath the surface of the earth capable of containing or producing water from a well. In order to avoid toxic and hazardous waste contamination to drinking water supplies, groundwater recharge areas must be protected. While recharge takes place throughout practically all of Georgia's land area, the rate or amount of recharge reaching underground aquifers varies from place to place depending on geologic conditions.

According to data provided by the Georgia Department of Natural Resources on the Ground-Water Pollution Susceptibility Map of Georgia, Hydrologic Atlas 20, Columbia County contains several significant groundwater recharge areas. Recharge areas range from lower susceptibility areas in the upper northwest section of the county adjacent to Mistletoe State Park and Clarks Hill Lake, to average and higher susceptibility areas in the lower west portion of the county that borders McDuffie and the southern portion of the county that borders Richmond County.

Both the state and federal government regulate groundwater recharge areas. Requirements from the Environmental Protection Division, (EPD), include restrictions and regulations on sanitary landfills, land disposal of hazardous wastes, spray irrigation of wastewater and wastewater treatment basins.

As part of this comprehensive plan update, the County will adopt a Groundwater Recharge Area Protection Ordinance to meet DNR Part 5 Minimum Requirements. This Ordinance will establish a groundwater recharge area district, determine pollution susceptibility, and establish permit development review, site plan requirements and enforcement policies. The objectives of the ordinance are:

- Protect groundwater quality by restricting land uses that generate, use or store dangerous pollutants in recharge areas;
- Protect groundwater quality by limited density of development; and
- Protect groundwater quality by ensuring that any development that occurs within the recharge area shall have no adverse effect on groundwater quality.

Overall requirements of significant recharge areas, as defined and delineated by DNR, are as follows:

- New hazardous waste treatment or disposal facilities are prohibited.
- New sanitary landfills, if permitted by DNR and the zoning district, shall have synthetic liners and leachate collection systems.
- Any new facility that involves the treatment, storage or disposal of hazardous waste, if permitted by DNR and the zoning district, shall perform such operations on an impermeable surface having a spill and leak collection system.
- Any new facility that handles hazardous materials of the types listed in Section 312 of the Resource Conservation and Recovery Act of 1976 (excluding underground storage tanks) in amounts of 10,000 pounds or more on any one day shall perform their operations on impermeable surfaces having spill and leak collection systems as prescribed by DNR.
- A new above-ground chemical or petroleum storage tank must have secondary containment of 110% of the volume of the tank or 110% of the volume of the largest tank in a cluster of tanks. This requirement does not apply to:
  - Any tank having a maximum capacity of less than 660 gallons; and,
  - Any tank used for agricultural purposes, provided it complies with all Federal requirements.

Requirements for ground water recharge areas vary according to the susceptibility of the recharge area. Following are requirements by recharge area:

- Within a significant recharge area classified as having “lower” susceptibility to pollution, the following applies:
  - New agricultural waste impoundment sites larger than 50 acre-feet must be lined.
  - Any new home served by septic tank/drain field system must be approved by the County Health Department and must have a lot that is at least 110% of the minimum lot size required by Table MT-1 of the Department of Human Resource’s Manual for On-site Sewage Management Systems.

- Any new manufactured home park served by a septic tank/drain field system must be approved by the county Health Department and must have a lot or space that is at least 110% of the minimum lot or space size required by Table MT-2 of the Department of Human Resource's Manual for On-Site Sewage Management Systems.

- Within a significant recharge area classified as having an "average" susceptibility to pollution, the following applies:
  - New agricultural waste impoundment sites larger than 15 acre-feet must be lined.
  - Any new home served by septic tank/drain field system must be approved by the County Health Department and must have a lot that is at least 125% of the minimum lot size required by Table MT-1 of the Department of Human Resource's Manual for On-site Sewage Management Systems.
  - A new manufactured home park served by a septic tank/drain field system must be approved by the county Health Department and must have a lot or space that is at least 125% of the minimum lot or space size required by Table MT-2 of the Department of Human Resource's Manual for On-Site Sewage Management Systems

- Within a significant recharge area classified as having a "higher" susceptibility to pollution, the following applies:
  - All new agricultural waste impoundment sites must be lined.
  - Any new home served by septic tank/drain field system must be approved by the County Health Department and must have a lot that is at least 150% of the minimum lot size required by Table MT-1 of the Department of Human Resource's Manual for On-site Sewage Management Systems.
  - Any new manufactured home park served by a septic tank/drain field system must be approved by the county Health Department and must have a lot or space that is at least 150% of the minimum lot or space size required by Table MT-2 of the Department of Human Resource's Manual for On-Site Sewage Management Systems.
  - Spray irrigation of wastewater or the land spreading of wastewater sludges must be approved by DNR.
  - Permanent storm water infiltration basins are prohibited.
  - New wastewater treatment basins (except for mining settling basins) must have an impermeable liner and be approved by DNR.

In addition to an Ordinance for Groundwater Recharge areas, the County has taken, and is in the process of taking several additional steps to protect ground water:

- Review current ordinances, such as the subdivision regulations, zoning ordinances and development regulations to prohibit land uses in recharge areas that pose a threat to aquifer water quality, such as waste disposal sites, water holding basins, septic tanks, hazardous materials handling operations/facilities, etc.
- Review proposed capital improvements, zoning districts and growth management plans in order to minimize impact on critical recharge areas.
- Identify critical recharge areas for purchase or protection as part of the County's Greenspace Plan.

- Consider offering development incentives for projects that contribute to recharge area protection.

Water Supply Watersheds

A water supply watershed is the area of land upstream of a public drinking water intake. Protection of water supply watersheds helps keep drinking water free of contamination. By limiting the amount of pollution that gets into the water supply, governments can reduce the cost of purification and guarantee improved public health. DNR criteria protect water supplies by establishing buffer zones around streams and by specifying allowable impervious surface densities within such watersheds. Since large drainage basins are less vulnerable to contamination by land development than small basins, more stringent watershed protection criteria are applied to water supply watersheds less than 100 square miles in size.

Columbia County contains 3 watersheds: the Little River Watershed in the northwest portion of the county, the Brier Creek Watershed at the southern part, and the remainder and majority of the County within the Middle Savannah Watershed. All three watersheds are classified as large drainage basins, and therefore are governed by DNR's "large watershed criteria."

The County currently has several programs and policies to help eliminate pollution sources affecting its water supply watersheds. As an element of the land disturbance permitting process, the County has adopted a Soil Erosion and Sedimentation Control Ordinance requiring that sediment be retained on site. This is accomplished by means of silt fencing, sediment basins, rip-rap, and other erosion and sedimentation control measures.

The County is currently working with CSRA Regional Development Center to draft watershed protection ordinances. These ordinances will include a mapping of the regional watersheds and designation of districts that include a reservoir, a seven-mile radius protection area of a water intake, and a secondary protection area for areas within a watershed, but not within a 7-mile radius of a water intake area. All forms of development within the Watershed District are required to go through a site plan review process. All development activities or site work conducted after approval of the site plan must conform to specification of the approved site plan. The County will continue to work with the RDC in the future to address water supply issues on a regional basis.

The three watersheds within Columbia County are recognized as large water supply watersheds, having 100 square miles or more of drainage area above the water supply intakes. The Middle Savannah watershed qualifies further for environmental protection because the drainage area supplies water to the Clarks Hill Lake and the Stevens Creek Impoundment reservoirs.

The following requirements will apply to water supply districts:

- New facilities handling hazardous materials shall perform their operations on impervious surfaces and in conformance with any applicable federal spill prevention requirements or the requirements of the Standard Fire Prevention Code.

All of the above policies and programs indicate the County's desire to protect this valuable resource from pollution. This County also recognizes the need to further study and implement future programs and policies, and increase coordination of land uses and development. The County views the DNR's minimum "Criteria for Protection of Water Supply Watersheds" as an instrument to obtain this extra measure of protection.

Wetlands

Wetlands serve as important fish and wildlife habitats and breeding ground, and are an integral factor in food chain production. Numerous plant and animal species have adapted to the special conditions of freshwater wetlands and cannot survive elsewhere. Wetlands serve as storage areas for flood protection/control, erosion control, water quality maintenance, groundwater recharge and supply and recreation opportunities. Wetlands generally include swamps, marshes, bogs and similar areas. In Columbia County, wetlands are adjacent to Clarks Hill Lake, the Savannah River and along the creeks that run throughout the County.

Wetlands are threatened by a number of human and natural actions. Some of these are direct human threats such as drainage of the wetlands for land reclamation, construction of dikes, dams and levees which alter wetlands, and discharge of toxic materials such as oils, pesticides or other pollutants which destroy plants and wildlife within the wetlands. Other human threats are indirect such as sediment diversion by dams and channels, and subsidence due to extraction of groundwater, oil and other minerals. Finally, some other threats are natural such as storms, droughts, and destruction by animals.

The Environmental Protection Agency (EPA) is responsible for restoring and maintaining the environmental integrity of the nation's wetland resources. The major federal regulatory tool for achieving this is "Section 404" of the *Clean Water Act*. Section 404 establishes a permit program to regulate the discharge of dredge or fill material into waters of the United States, including most wetlands. To protect these environmentally sensitive areas, the EPA's goal is to allow no long-term degradation and no net loss of wetlands. A 404 permit may be required for any discharge of dredge or fill material in wetlands of over .1 acre in size; penalties for beginning work without a permit are severe. The Clean Water Act requires that a determination of jurisdiction for any work that would result in altering over one-acre wetlands.

In 1995 the County amended its Zoning Ordinance to clearly require Section 404 review by the Corps of Engineers of any land disturbance proposed in a wetland area. Hazardous or toxic waste receiving, treatment or disposal facilities and sanitary landfills are prohibited within wetland areas.

Utilizing the Georgia Planning Act of 1990 criteria for wetlands protection, land uses that are deemed acceptable within wetland and flood prone areas include: (1) Timber production and harvesting, (2) Wildlife and fisheries management, (3) Wastewater treatment, (4) Camping, hiking, hunting and fishing recreation activities, (5) Natural water quality treatment and purification, (6) Other uses permitted under Section 404 of the Clean Water Act. In addition, as outlined elsewhere in this chapter, the County is working towards developing a greenway system to further protect sensitive areas.

River and Stream Corridors

Floodplains

In the majority of the County, floodplains tend to be narrow, except in the southern part of the County where they are moderately wide. The upland soils are generally well drained. The bottomlands waterways drain off slowly and remain wet for long periods. Flood prone areas encompass about 17% of the acreage in Colombia County's total 196,823 acres. Much of this area is contained in the flood plain areas, and is usable to some extent for non-intensive uses such as agriculture, recreation, etc.

Floodplain management is required under the National Flood Insurance Act of 1963 and the Flood Disaster Protection Act of 1973. The County has adopted a Flood Damage Prevention Ordinance, which sets forth guidelines and standards for development within the flood plain. Additional restrictions regarding lots containing floodplain areas and site plans are also outlined in the Zoning Ordinance Use Provisions.

Protected River Corridor

The Savannah River forms the eastern boundary of Columbia County. The Savannah River Corridor is an important resource in terms of its unique habitat for wildlife, a site for recreation, and a source of drinking water and energy. In addition to various types of animals and birds, species that appear on the State of Georgia Endangered Species list have been observed in the river and canal area, including the bald eagle, shortnose sturgeon, wood stork, and Bachman's sparrow. The County has recently adopted a River Corridor Protection Plan for the Savannah River Corridor that meets the requirements of the Mountain And River Corridor Protection Act of 1991.

The area along the Savannah River is mainly undeveloped with limited single-family residential development. Stevens Creek Dam which generates hydropower and energy is located just northwest of Stallings Island. Existing power line corridors leading from the Stevens Creek Dam power plant cross the river at Stallings Island and head downstream towards Augusta. Farther down stream abutting the Savannah Rapids Pavilion, are the Canal Locks and Dam Area and the canal head gates. South and east is Martin-Marietta quarry and stone crushing facility that extends up to the high water mark of the canal.

The protection plan includes the implementation of a 100-foot natural vegetative buffer on the Georgia side of the banks, and list of permitted land uses. Permitted land uses include, low-density residential (subject to local zoning and Health Department regulations), road and utility crossings, timber production and harvesting, wildlife and fisheries management, recreational uses and facilities consistent with the natural buffer and/or river-dependent recreation activities, agricultural production and management.

Non-Point Source Pollution

Non-point source pollution is a form of water pollution that occurs in small areas throughout a drainage area as opposed to a single discharge point. The County is currently working on development standards for storm water management within drainage corridors. The County recently implemented a Stormwater Utility to fund stormwater-related projects within the eastern 1/3 of the County (i.e the area east of William Few Parkway and Chamblin Road). Funds will be used to correct existing flooding and erosion problems in the Reed Creek drainage basin as well as to rehabilitate existing facilities in urban areas and stabilize eroding streambeds. The funds are allocated in Tiers I, II, and III for a total of $750,000, with the largest capital outlay occurring in the first tier in the amount of $500,000.

Scenic Views and Sites

Two specific scenic views have been identified in Columbia County, the Savannah River and the Gross Place Road area.

The majority of the riverbanks along the Savannah River remain heavily wooded and undeveloped, with limited single-family residential development. The River provides a natural habitat for deer, raccoon, beaver, mink, muskrat, wild turkey, raptors, wading birds, as well as a variety of reptiles and amphibian species. Stallings Island National Historic Landmark is located in the River. Other significant land uses include the Augusta Canal Lock and Dam, the Savannah Rapids Pavilion, Stevens Creek Dam and the Martin-Marietta quarry.

Based on limited availability of water and sewer and the River Corridor Protection Act, intense development is not expected to occur along the river, which should help protect this area and its historic significance, vistas, and the natural habitat it affords. In addition, the County is currently looking at ways to increase public access to the River.

Gross Place Road is a dirt road leading from Appling west to the County line. This area is an unspoiled example of the rural environment that County residents would like to see preserved. Currently it is used as an unofficial motorbike trail.

Columbia County Greenspace Program

This chapter documents the wealth of natural resources within the County. As a means of preserving these resources for future generations, the County has submitted an application to the Georgia Greenspace Commission in the hopes of being awarded funds to assist with preservation efforts. Based on current population and projected growth, Columbia County is eligible for approximately $561,837 in state funds in the coming year to acquire and conserve targeted greenspace and other natural resources.

Currently, approximately 6 percent (11,121 acres) of the County's total land area is considered "permanently protected." The goal of the County's Greenspace Program is to protect at least 14 percent more to achieve the State-mandated minimum of 20 percent. The County's strategy for targeting additional greenspace focuses on five broad areas for land acquisition or other protection measures, as outlined below:

Savannah River Conservation Area & Greenway

A 200-foot wide corridor running along the southern banks of the Savannah River is proposed for acquisition/protection to create a continuous greenway for cyclists, joggers, and pedestrians. The conservation area would protect natural resources along the shoreline and the greenway would connect the existing North Augusta Greenway in Richmond County all the way to Clarks Hill Lake.

Floodplain Greenways

Columbia County is characterized by a series of gently sloping ridges that guide the course of several creeks including Kiokee, Little Kiokee, Euchee, Betty's Branch, Jones, and Reed Creek. The floodplains associated with these six waterways are targeted for land acquisition/protection, in the form of 100-foot wide corridors, to provide greenways linking urbanized parts of the county to passive recreational areas.

Martinez-Evans Open Space

Within the urbanized area of the county open space is at a premium and disappearing rapidly. The plan targets remaining vacant parcels in Martinez-Evans for acquisition/protection in order to provide small-scale pocket parks and passive open space. The attached Greenspace Program Map designates vacant land in Martinez-Evans in two distinct categories:

- Type A – Vacant land with conservation area tax abatement status, and
- Type B – All other vacant land in Martinez-Evans

Northwest Conservation Area

In the northwest part of the County there is a significant groundwater recharge area where water infiltrates the ground to replenish the aquifer and maintain high standards for water quality. While this area is sparsely developed at present and utilized primarily for agricultural purposes, its proximity to Mistletoe State Park and Clarks Hill Lake makes it vulnerable to future development pressures. The plan targets this area as appropriate for rural conservation in which remaining vacant parcels should be acquired and restrictions enforced regarding sanitary landfills, land disposal of hazardous wastes, spray irrigation of wastewater and wastewater treatment basins.

Historic/Natural Resources

One of Georgia's twelve natural landmarks, Heggie's Rock in the central part of the County is home to many endangered plant and animal species. Currently, the Nature Conservancy protects 101 acres of the Heggie's Rock Preserve as a private nature preserve that they own and run. However, there are additional natural resource lands in the vicinity of the granite outcropping that are not currently protected and that also contain rare plant species. Thus, the Greenspace Program targets the additional 700 acres surrounding the existing nature preserve for acquisition in order to provide a buffer for this unique and valuable natural resource.

To accomplish this long-range goal of greenspace preservation, the County will utilize several tools such as:

- Obtaining conservation easements on privately owned land to protect natural, historic, or recreational resources, or to protect agricultural or forestry uses,
- Acquiring land in fee simple to ensure its permanent protection as greenspace, and
- Entering into contractual arrangements to ensure that, if the protected status is discontinued, such land will be replaced by other greenspace of equal or greater monetary and resource protection value.

Thus, the Columbia County Greenspace Program will utilize resources from the state in order to leverage the additional funds needed to achieve permanent protection of valuable greenspace in the County. Ultimately, the program will develop a system of greenways and protected open spaces that interconnect recreation, living and working areas throughout the County. The program will preserve scenic corridors and protect sensitive natural resources, such as the wetland areas of the Savannah River and Kiokee and Euchee Creek basins. The objectives of this program are closely tied to the County's comprehensive plan and consistent with the growth management strategies described herein.

Summary and Needs Assessment

Columbia County has an abundance of natural resources that warrant attention because of their sensitive nature and valuable contribution to the community. The County has taken several specific steps for the protection of water resources and conservation of the natural environment. In addition to direct protection of the natural environment, the County will continue to educate its citizens about local threatened or endangered species and environmental impacts through the County web page.

Responsibility for the protection of the natural environment is regulated under several agencies and regulations: through the County—Savannah River Development Regulations, Tree Protection Ordinance, Soil Erosion Ordinance, Flood Protection Ordinance, land use restrictions, "greenway" stream corridors, site plan/engineering review, land disturbance and building permits and construction permits; through the Georgia DNR—Water resource and soil erosion regulations and inspections; and through the US EPA/Corps of Engineers—wetland (404) permits. Due to the anticipated growth of the County, the County will continue to enforce current regulations with regards to floodplains, wetlands, groundwater recharge areas, Savannah River Protection Act, and the Tree Protection Ordinance and to develop additional regulations and requirements as necessary in the future. The County is currently studying or developing the following programs to provide natural resource protection:

- Several important water resources are located within the county, including four water recharge areas with susceptibility ratings from low to high. The County will adopt DNR's "Part 5" Development Regulations as part of their Development Code in order to protect these important resources. In addition, the County has considered the location of public capital improvements (sewer line extensions, roads, etc.) so that new development is directed away from critical areas.
- Study purchasing sensitive lands outright through the county or a non-profit organization. These lands could be used in the public interest for such purposes as wildlife refuges, parks, recreation areas, etc.
- Offer development incentives for projects that contribute to recharge area protection by setting aside critical recharge areas (as passive parks/recreation areas, for instance), using large lot sizes.
- Identify any and all uses during the development process that may endanger valuable water resources, such as hazardous waste handling facilities, new stormwater infiltration basins. Ban uses that would harm water resources.
- Require Environmental Protection Division (EPD) of DNR approval for all new sanitary landfills, land disposal of Hazardous Waste Sites, new wastewater treatment basins, wastewater irrigation systems.
- Require USDA Natural Resources Conservation Service (NRCS) approval for all new agricultural Waste Impoundment Sites.

The County will continue to control development location and practices so that unsuitable soils are not built on, erosion is minimized, wetlands are not disturbed and floodplains are avoided. The County currently enforces responsible development practices through land disturbance and building permits, inspection and review process. This process adequately mitigates negative development practices and will remain intact in the future.

Forward 2020

Columbia County

Natural Resources

LEGEND

- County Boundaries
- Rivers and Streams
- Lakes and Ponds
- Georgia Protected River Corridor
- Wetlands
- FEMA Floodplain
- Drainage Basins
- State Parks
- Wildlife Mgmt. Areas

Groundwater Recharge Areas

- Cretaceous - Tertiary Aquifer System
- Probable Thick Soils - Possible Significant Recharge Areas

N W E S

4000 0 4000 8000 Feet

SCALE: 1" = 4000'

COOPER•ROSS sv

IRIAN Collage

PBSJ

LINCOLN

CLARKS HILL LAKE

Clarks Hill

Lloyd Creek

Savannah River

SOUTH CAROLINA

Kiokee Creek

COLUMBIA

Betty's Branch

Jones Creek

Reed Creek

Little Kiokee Creek

Euchee Creek

Crane Creek

Butler Creek

MCDUFFIE

Sandy Run

Butler Creek

Boggy Gut Creek

RICHMOND

Forward 2020

Columbia County

Greenspace Program

LEGEND

- County Boundaries
- City Boundaries
- Parcel Boundaries
- Hydrography
- Major Roads
- FEMA Floodplain
- Existing Qualified Greenspace

Proposed Greenspace Categories

- Savannah River Greenway
- Floodplain Greenway
- Conservation Area
- Historic/Natural Resources
- Open Space Acquisition -Type A
- Open Space Acquisition -Type B

NOTE: Type A acquisition is vacant land designated with conservation area tax abatement status; Type B acquisition is all other vacant land.

N W E S

4000 0 4000 8000 Feet

SCALE: 1" = 4000'

COOPER•ROSS SV

URBAN Collage

PBSJ

LINCOLN

CLARKS HILL LAKE

SOUTH CAROLINA

Savannah River

COLUMBIA

Grovetown

Harlem

FT. GORDON

MCDUFFIE

RICHMOND

COBBHAM ROAD

CLARKS HILL ROAD

WASHINGTON ROAD

TUBMAN FERRY ROAD

COLUMBIA ROAD

WRIGHTSBORO ROAD

GORDON HIGHWAY

APPLING HARLEM ROAD

47 150 104 221 28 383 232 20 223 388 278